Specialist High Skills Major

Sector-Specific Guide

The Environment

DRAFT 2008–2009

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Une publication équivalente est disponible en français sous le titre suivant :
Majeure Haute Spécialisation, Guide de la majeure en environnement.

This publication is available on the Ministry of Education's website, at www.edu.gov.on.ca.

A. Overview

The Specialist High Skills Majors (SHSM), launched in September 2006, are part of the Student Success Strategy, which focuses on expanding quality learning opportunities and supporting success for all students. The SHSM is a ministry-approved specialized program that allows students to focus their learning on a specific economic sector while meeting the requirements for their Ontario Secondary School Diploma (OSSD). This career-focused program is also designed to help prepare students to make the transition from secondary school to apprenticeship training, college, university, or the workplace. An SHSM enables students to gain sector-specific skills and knowledge in the context of engaging, career-related learning environments and helps them focus on graduation and on pursuing their postsecondary goals.

The ministry has published the *Specialist High Skills Major Implementation Guide*, as well as sector-specific guides, like this one, for each of the SHSM economic sectors. Boards and schools are strongly encouraged to refer to the *SHSM Implementation Guide* along with the SHSM sector-specific guides when planning and implementing an SHSM. In addition, teachers will find resources, templates, and forums for discussion on the SHSM e-Community website, at http://community.elearningontario.ca (a password-protected site for educators).

This guide provides information about the five required components of the SHSM–The Environment, sample pathways for the SHSM, examples of postsecondary programs in the sector, and a list of resources that may be helpful to both teachers and students involved in the program.

B. Advantages of Earning a Specialist High Skills Major (SHSM) in the Environment

Employment in the environment sector has boomed in recent years and existing labour shortages in this sector are only expected to increase as regulations to meet Canada's goals regarding climate change come into effect, say industry experts.

On the numbers of workers in this sector, Grant Trump, president of Environmental Careers Organization Canada (ECO Canada), said the following in a May 29, 2007, news release:

> *The scope of the environment industry is very broad and is a component, to varying degrees, of every industry in Canada. There are approximately 530,400 environmental employees within major industry groups across Canada. This number represents 3.2% of Canada's workforce.*

ECO Canada's *Profile of Canadian Environmental Employment 2007** defines environmental employment as work in at least one of the sectors of the economy related to:

- *Environmental Protection (i.e., air quality, water quality, land quality, waste management, restoration and reclamation, human and environmental health and safety, environmental protection management);*
- *Conservation and Preservation of Natural Resources (i.e., fisheries and wildlife, forestry, agriculture, mining, energy, parks and natural reserves, natural resources management);*
- *Environmental Sustainability (i.e., education, research and development, policy and legislation, communications and policy awareness, management for sustainable development).*

The SHSM–The Environment enables students to build a foundation of sector-focused knowledge and skills before graduating and entering apprenticeship training, college, university, or an entry-level position in the workplace.

Pursuing the Specialist High Skills Major–The Environment enables students to:

- customize their secondary school education to suit their interests and talents while meeting the requirements for the OSSD;

* Published online, at www.eco.ca/pdf/LMI_Industry_Final_2007_EN.pdf. Retrieved November 22, 2007.

- select a bundle of 9 required credits focused on sector-specific knowledge and skills that are:
  - valued by the environment sector and postsecondary educational institutions;
  - designed to help prepare students for a postsecondary opportunity of their choice in this economic sector;
  - designed with the flexibility to allow students to shift between pathways (e.g., switch from a pathway leading to college to an apprenticeship pathway) or to discontinue the SHSM program should their career plans change in Grades 11 or 12;
- provide evidence of achievement of the required components of the SHSM (e.g., sector-recognized certifications) for prospective employers and postsecondary educational institutions;
- explore, identify, and refine career goals and make informed decisions about their postsecondary options;
- take part in "reach ahead" experiences that will help them gain confidence in their ability to be successful, refine skills and work habits, and make an informed choice about future careers and next steps;
- identify and develop Essential Skills and work habits that are required in the sector, using tools connected with the Ontario Skills Passport;
- access resources, equipment, and expertise that may not be available in their secondary school.

C. Required Components for the SHSM–The Environment

Required Components for the SHSM–The Environment

1. a bundle of 9 Grade 11 and Grade 12 credits that includes:
   i) 4 environment major credits that provide sector-specific knowledge and skills;
   ii) 3 other required credits from the Ontario curriculum, in English and mathematics, in which some expectations are met through learning activities contextualized to the environment sector;
   iii) 2 cooperative education credits that provide authentic learning experiences in a workplace setting, enabling students to refine, extend, apply, and practise sector-specific knowledge and skills
2. 7 sector-recognized certifications and/or training courses/programs (4 compulsory and a choice of 3 electives from a list of additional certifications and training courses/programs)
3. experiential learning and career exploration activities within the sector
4. "reach ahead" experiences connected with the student's postsecondary pathway
5. development of Essential Skills and work habits required in the sector, and use of the Ontario Skills Passport (OSP) for purposes of documentation

Students who complete the requirements for the OSSD and for the SHSM will receive an OSSD with the SHSM seal. Credits earned towards the SHSM are indicated on the provincial report card, and completion of the SHSM is recorded on the Ontario Student Transcript (OST). In addition, all students who participate in the SHSM program will receive an SHSM Record, which documents their achievement of the required components of the SHSM.

The five required components for an SHSM diploma designation are designed to give students a rich and varied range of curriculum-based and experiential learning experiences, as a foundation for making a successful transition to their chosen postsecondary education or training program or occupation.

Local circumstances, such as facilities and equipment, staff qualifications, partnerships, and agreements, determine how the SHSM's required components can be offered to students. Depending on these circumstances, the components may be delivered in a secondary school, college, training centre, other approved site, or a combination of these delivery settings. See the *SHSM Implementation Guide* for more information on delivery models.

No substitutions for any of the five required components of an SHSM are permitted.

1. Bundled Credits

Each SHSM has a bundle of credits that consists of major credits, other required credits, and cooperative education credits. The bundle for the SHSM–The Environment consists of:

i) 4 major credits;

ii) 3 other required credits;*

iii) 2 cooperative education credits.

The credits in the bundle prepare students for one of four postsecondary options – apprenticeship training, college, university, or the workplace.

i) Major credits

Each SHSM has four major credits that enable students to build a foundation of sector-focused knowledge and skills. The major credits may be:

- credits for Ontario curriculum courses;
- credits for ministry-approved locally developed courses (LDCs); or
- dual credits, which are subject to their own approval policies and procedures.

An SHSM can be designed to focus on a specific area within the given sector – for example, the SHSM–The Environment can focus on environmental studies or environmental science. This focus is achieved through the selection of the four major credits in the bundle. Depending on local circumstances, boards may elect to offer one or more variants of the SHSM in a given sector, each with a particular area of focus. Where a choice of focus areas is offered, students are required to select *one*.

ii) Other required credits

In addition to the major credits, each SHSM includes other *required credits* from the Ontario curriculum. (In the SHSM–The Environment, the other required credits are in English and mathematics.) These courses are delivered by the teachers of the required subjects, and involve the use of contextualized learning activities (CLAs), which enable students to connect their learning in these courses to their SHSM sector. CLAs are based on curriculum expectations from the required course. One or more CLAs must be incorporated into each required course. (A CLA template is provided in Appendix A.)

iii) Cooperative education credits

Cooperative education provides authentic learning experiences in a workplace setting that enable students to refine, extend, apply, and practise the sector-specific knowledge and skills acquired in the bundle of credits. Each SHSM requires that students complete a minimum of two credits in cooperative education related to the major credits. (More than two credits are recommended, if the student's timetable permits.)

Students may earn their minimum of two cooperative education credits in Grade 11 and/or Grade 12, as a single credit in each grade or a double credit in one grade. Students in the university pathway, however, are advised to complete their cooperative education credits

* SHSMs in other sectors may require 2 or 4 "other" credits. For details, see the other sector-specific guides.

in Grade 11, in order to allow room in their timetables in Grade 12 for credits needed to meet university entrance requirements. Depending on local circumstances, students may have to complete their cooperative education credits through continuing education, in the summer, or through virtual cooperative education. See *Cooperative Education and Other Forms of Experiential Learning: Policies and Procedures for Ontario Secondary Schools, 2000*, and Appendix B, Part A in this guide.

- **The bundle of credits for every SHSM offered by a school must be approved by the Ministry of Education.**
- **No substitutions for the credits in the approved bundle are permitted.**
- **No changes are permitted in the grade level of required credits for an SHSM, as identified in the sector-specific guides.**

Summary of the Required Credits in the Bundle for the SHSM–The Environment

The 9 required credits in the bundle for the SHSM–The Environment are identified in the table below. No substitutions for the credits in the bundle are allowed, and the credits must be at the specified grade level. School boards are required to submit for ministry approval their proposed pathway chart for each SHSM offered by their schools, indicating the credits in each bundle by pathway and, where applicable, by area of focus. Once a credit bundle is approved, the board may not change any of the credits in the bundle for that school year.

Required Credits in the Bundle for the SHSM–The Environment

Credits		Apprenticeship Training		College		University		Workplace	
		Gr. 11	Gr. 12	Gr. 11	Gr. 12	Gr. 11	Gr. 12	Gr. 11	Gr. 12
Environment Major		2	2	2	2	2	2	2	2
"Other required credits" (with CLAs)	English	1	1	1	1	1	1	1	1
	Mathematics	1		1		1		1	
Cooperative Education		2		2		2		2	
Total number of credits		**9**		**9**		**9**		**9**	

A pathways chart is given on page 15, showing subjects and courses that students could take to explore the SHSM–The Environment in Grades 9 and 10, and courses they would have to take in Grades 11 and 12 to complete this specialized program. Sample bundles of credits that would meet the requirements for the SHSM–The Environment are provided on pages 16 and 17.

A student's course selections must take into account entrance requirements for the postsecondary education or training program, apprenticeship program, or job that the student hopes to enter.

2. Sector-Recognized Certification and Training

Sector-recognized certifications and training courses/programs, including those addressing safety, are important for students who are working towards the SHSM and provide them with an advantage when they are entering the workforce, whatever their chosen career goal may be.

Certification and training courses/programs (including online courses/programs) must:

- be delivered by a person (who may be a teacher) who is certified by the certification provider as a trainer or recognized by the sector as an authority. Online courses/programs must be from a recognized certification provider. (These requirements do not apply to WHMIS.);
- include an assessment and/or evaluation component;
- include, wherever possible, documentation such as a certificate or other proof of completion for the student's portfolio and the student's SHSM Record. The SHSM Record will indicate the title of each certification earned or training course/program completed, the number of hours involved, and the date the certification/training was completed.

The SHSM in the environment requires students to complete seven (7) sector-recognized certifications and/or training courses/programs. Of these, four (4) are in areas that are compulsory and the remaining three (3) are electives that must be chosen from the list in the following chart. *Note that items in the chart that are capitalized are the* proper names *of specific certifications or training courses/programs that are appropriate for the SHSM. Items that are lowercased are names of the areas or categories within which specific certification or training courses/programs should be selected by the school or board.* The requirements are summarized below:

SHSM–The Environment: Sector-Recognized Certification and Training

Four (4) compulsory			
Standard First Aid	Cardio-Pulmonary Resuscitation (CPR), Level A	global positioning systems (GPS)	generic (i.e., not site-specific) instruction about the Workplace Hazardous Materials Information System (WHMIS)
Three (3) electives from the list below			
animal and plant management	chainsaw safety	water/ice safety	geographic information system (GIS)
habitat restoration	Hike Ontario	Ontario Hunter Education	leadership
Leave No Trace	map and compass use	radio operator	Ontario Stream Assessment Protocol
paddling techniques	Pleasure Craft Operator	wilderness first aid	search and rescue
species (e.g., fish, birds, plants, trees, small mammals) identification	watershed management	automated external defibulation (AED)	life saving (NLS or Bronze Cross)
Project Wild	knots techniques		

Boards and schools may provide opportunities for students to complete additional training.

No substitutions for items in the above lists or changes in the *number* of required certifications and training courses/programs are permitted.

3. Experiential Learning and Career Exploration Activities

Experiential learning and career exploration activities that fulfil the SHSM requirement are planned learning activities that take place outside the traditional classroom setting and relate to the sector of the SHSM. These activities, which can include job shadowing, job twinning, worksite tours, and attendance at career conferences or competitions (see Appendix B, Part B), enable students enrolled in the SHSM to explore careers in the sector. Students will benefit from the opportunity to reflect on the activity afterwards, either through a discussion or an assignment.

Experiential learning and career exploration activities give students opportunities to explore, observe, participate in, and reflect on a variety of sector-specific experiences and careers. They also enable students to increase their awareness of, and develop, the Essential Skills and work habits required in the sector, and have their demonstration of those skills and habits documented, using tools connected with the Ontario Skills Passport. An experiential assignment or task could require students to identify examples of how the Essential Skills are applied in specific administrative and management occupations (e.g., conservation officer, recycling manager) in an environment-sector workplace.

Experiential learning opportunities could include:

- one-on-one observation of a cooperative education student in a placement in an environmental sector (example of job twinning);
- a day-long observation of an environmental sector employer or employee (example of job shadowing);
- a one- or two-week work experience with a member of an environmental non-governmental organization (NGO) or an employee in the environmental sector (example of work experience);
- attendance at a trade show (e.g., Toronto Sportsmen's Show, Outdoor Adventure Show), conference, or workshop focusing on the environmental sector;
- assisting with trail maintenance, trail cleanup;
- participating in Envirothon.

Cooperative education is also a form of experiential learning. However, for the purposes of the SHSM program requirements and the student's SHSM Record, the two cooperative education credits must be counted as part of the SHSM bundled credit requirement.

Experiential learning placements for students must be arranged by the school and must meet the following requirements:

- A placement must be assessed by a teacher before the student is assigned to it to ensure that the placement offers a positive learning environment and a safe workplace. (*See Cooperative Education and Other Forms of Experiential Learning: Policies and Procedures for Ontario Secondary Schools*, 2000. Available online at www.edu.gov.on.ca/eng/document/curricul/secondary/coop/cooped.pdf.)
- Workplace Safety and Insurance Board coverage must be in place through the ministry or the workplace. (See Policy/Program Memorandum No. 76A, September 27, 2000; excerpted in Appendix B of the *SHSM Implementation Guide*.)

Career exploration activities must also be arranged by the school. Preparation for these activities should include a review of the learning goals, activity protocols, and workplace health and safety requirements.

For more information consult *Live Safe! Work Smart! Appendix for Cooperative Education and Other Forms of Experiential Learning*, at www.livesafeworksmart.net/english/coop/coop_appdx.htm.

For a summary of the regulations governing age requirements for working in and/or visiting workplaces in Ontario, see Appendix C.

4. "Reach Ahead" Experiences

"Reach ahead" experiences provide students with an opportunity to experience the next step in their chosen pathway (e.g., an experience in a workplace setting for a student who has chosen a workplace pathway; a college-related experience for a student who has chosen a college pathway). Reach ahead experiences take place outside the classroom and vary in length. The experience should be followed by a debriefing, an assignment, or a task that enables students to reflect on their chosen destination.

The following are examples of "reach ahead" experiences in the various pathways:

- *Apprenticeship training pathway:* Visiting an approved apprenticeship delivery agent to investigate a program of interest to the SHSM student.
- *College pathway:* Interviewing a college student enrolled in a program of interest to the SHSM student, in order to learn about that program.
- *University pathway:* Observing a university class in the SHSM student's program of interest.
- *Workplace pathway:* Interviewing an employee in the field of work that the SHSM student is considering.

5. Development of Essential Skills and Work Habits, and Use of the Ontario Skills Passport (OSP) for Purposes of Documentation

The Ontario Skills Passport (OSP) is a bilingual web-based resource that provides a common language for describing the Essential Skills and work habits important for work, learning, and life. Essential Skills are the generic skills used in virtually all occupations and all facets of daily life, and include Reading Text, Writing, Document Use, Oral Communication, Money Math, and Finding Information. Human Resources and Social Development Canada (HRSDC) has identified and validated the Essential Skills. Essential Skills enable people to perform tasks required in their jobs and to participate fully in the workplace and the community. They provide the foundation for learning other skills, such as technical skills and job- or workplace-specific skills, and they help people adjust to change. The OSP also includes important work habits such as working safely, teamwork, reliability, and initiative. The Essential Skills and work habits described in the OSP are included in the chart below.

Essential Skills	Work Habits
• Reading Text • Writing • Document Use • Computer Use • Oral Communication *Numeracy* • Money Math • Scheduling or Budgeting and Accounting • Measurement and Calculation • Data Analysis • Numerical Estimation *Thinking Skills* • Job Task Planning and Organizing • Decision Making • Problem Solving • Finding Information	• Working Safely • Teamwork • Reliability • Organization • Working Independently • Initiative • Self-Advocacy • Customer Service • Entrepreneurship

Sector representatives consulted on the development of the SHSMs emphasized the importance of the Essential Skills and work habits. Essential Skills and work habits are transferable from school to work or to further education or training, as well as from job to job and sector to sector. The OSP provides sample tasks for each skill and work habit in work, learning, and life contexts, and details how workers use Essential Skills on the job. The OSP offers tools that help students build confidence and competence and make connections between their studies at school and their prospective careers.

Students use the OSP to learn about Essential Skills and work habits, occupation-related tasks, and careers relevant to the SHSM. SHSM teachers provide students with opportunities to use the OSP tools to practise and build their Essential Skills and work habits. Students, in their SHSM cooperative education program, will create an OSP Work Plan related to their goals, interests, and particular SHSM sector, in which their employer (that is, their placement supervisor) may assess and record the Essential Skills and work habits that the student demonstrates. It would be beneficial for students to create a skills-based résumé, in preparation for interviews and meetings with employers, that clearly indicates their attainment of Essential Skills and work habits. Students can also use the OSP Tracker to plan opportunities for skills development during high school and after graduation.

The OSP website (http://skills.edu.gov.on.ca) offers resources for the use of the OSP in SHSM programs.

D. Pathways for the SHSM–The Environment

Shaping Our Schools, Shaping Our Future, published in June 2007, is the report of the Working Group on Environmental Education, appointed by the Ontario government to make recommendations about environment education in Ontario. In the report, the Working Group stated that environmental education should be "highly visible within, and reflected across, the Ontario curriculum" (page 13). With the implementation of this recommendation, students will have opportunities to learn about the environment in every elementary and secondary school grade.

The SHSM–The Environment provides a focus for students in the elementary and junior high school grades who become sufficiently interested in the environment to want to pursue a career in this area. To help educators support the interests of these students, this section provides:

- ideas that schools and boards can use to promote awareness and exploration of the SHSM in the environment among students and parents, and to help students as they make the decision to specialize in this program
- a chart showing a pathways template for completing the SHSM–The Environment
- a chart that contains sample bundles of credits for the SHSM–The Environment

Strategies for Promoting and Suggestions for Planning the SHSM–The Environment

Grades 7 and 8: Awareness

The following are examples of strategies that boards and schools can use to build Grade 7 and 8 students' awareness of the SHSM program:

- Organize field trips, competitions, and activities in the community that are specific to the SHSM.
- Host presentations or talks on careers with guest speakers and mentors from the sector.
- Hold a summer program sponsored by the sector before students enter secondary school.
- Organize experiences at a secondary school in the program related to this sector.
- Invite current or graduate SHSM students to share their experiences.
- Profile SHSMs at Grade 8 parent nights.

Grades 9 and 10: Exploration

Many of the strategies listed above would also help Grade 9 and 10 students begin to explore pathways planning and SHSM programs. In addition, the school board's SHSM lead could be invited to present information about the SHSM programs offered at the board's schools, and those programs could be profiled on the school and/or board websites. Displays could be set up for parent nights at the school to inform parents about the benefits of SHSM programs. Activities such as Take Our Kids to Work day also provide opportunities for students to explore careers in sectors that interest them.

Teachers who want to encourage students interested in pursuing the SHSM–The Environment can make sure that these students are better informed about this industry sector by:

- developing activities that both address curriculum expectations in geography and science courses and let students explore environmental issues
- encouraging them to enrol in Career Studies (compulsory) and Discovering the Workplace because some of the expectations in these Grade 10 courses provide opportunities for students to explore occupations and other postsecondary options in the sector and to participate in experiential learning activities.

Grades 11 and 12: Specialization

Students acquire the sector-specific knowledge and skills required to earn their OSSD with an SHSM–The Environment by completing its five required components. Students and their parents/guardians are encouraged to consult with guidance counsellors and teachers to select the courses that will enable them to pursue their goals.

The environment is a very wide field of study that includes various career pathways and employment opportunities. This document suggests two models of focus: environmental science and environmental studies.

An environmental science focus is geared towards students interested in careers in sciences, engineering, technology, and research. In the college and university pathway, students with an environmental science focus are advised to take additional math credits in Grade 12 (MHF4U Advanced Functions and/or MDM4U Mathematics of Data Management).

An environmental studies focus is for students more interested in recreation, tourism, and environmental policy.

Students pursuing a university pathway are advised to complete their required cooperative education credits in Grade 11, in order to allow room in their timetables in Grade 12 for credits needed to meet university entrance requirements.

Students may want to consider the Ministry of Natural Resources Ontario Ranger Program as a summer co-operative education placement.

Pathways Template for the SHSM–The Environment

- Shaded boxes – required credits in the bundle for the SHSM–The Environment
- (C) – compulsory credits for the OSSD

Grade 9 *Exploration*	**Grade 10** *Exploration*	**Apprenticeship Training Pathway** *Specialization*		**College Pathway** *Specialization*		**University Pathway** *Specialization*		**Workplace Pathway** *Specialization*	
		Grade 11	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**
An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit
(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English	(C) English
(C) Mathematics	(C) Mathematics	(C) Mathematics	Mathematics	(C) Mathematics	Mathematics	(C) Mathematics	Mathematics	(C) Mathematics	An optional or a compulsory credit
(C) Science	(C) Science	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit
(C) Geography of Canada	(C) Canadian History	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**
(C) Core French	(C) Career Studies/ Civics	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**	**Environment Major**
(C) Healthy Active Living Education	(C) The Arts	May be used as a (C) Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits) related to major credits, *recommended in Gr. 11*		May be used as a (C) Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12*	
An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit

Sample Bundles of Credits for the SHSM–The Environment: Environmental Studies Focus

- Shaded boxes – required credits in the bundle for the SHSM–The Environment
- (C) – compulsory credits for the OSSD
- The letters C, E, M, O, and U at the end of course codes indicate the following types of courses: C – college preparation; E – workplace preparation; M – university/college preparation; O – open; U – university preparation

Apprenticeship Training Pathway		College Pathway		University Pathway		Workplace Pathway	
Grade 11	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**
An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit
(C) ENG3C English	(C) ENG4C English	(C) ENG3C English	(C) ENG4C English	(C) ENG3U English	(C) ENG4U English	(C) ENG3E English	(C) ENG4E English
(C) MEL3E Mathematics for Work and Everyday Life	MEL4E Mathematics for Work and Everyday Life	(C) MBF3C Foundations for College Mathematics	MAP4CR Foundations for College Mathematics	(C) MCR3U Functions	MDM4U Mathematics of Data Management	(C) MEL3E Mathematics for Work and Everyday Life	GLN4O Navigating the Workplace
CGT3E Geographics: The Geographer's Toolkit	SNC4E Science	SNC3M Science *or* SBI3C Biology	SCH4C Chemistry	SCH3U Chemistry	SCH4U Chemistry *or* SBI4U Biology	TCJ3E Construction Technology *or* TDJ3E Technological Design	TCJ4E Construction Technology *or* TDJ4E Technological Design
Environment Major SBI3C Biology *or* SNC3E Science	**Environment Major** PAD4O Outdoor Activities	**Environment Major** SBI3C Biology *or* SNC3M Science	**Environment Major** PAD4O Outdoor Activities	**Environment Major** SBI3U Biology	**Environment Major** CLN4U Canadian and International Law *or* CPW4U Canadian and World Politics	**Environment Major** SNC3E Science	**Environment Major** PAD4O Outdoor Activities
Environment Major CGT3E Geographics: The Geographer's Toolkit	**Environment Major** CGR4E The Environment and Resource Management	**Environment Major** CGF3M Physical Geography: Patterns, Processes, and Interactions	**Environment Major** CGR4M The Environment and Resource Management	**Environment Major** CGF3M Physical Geography: Patterns, Processes, and Interactions	**Environment Major** CGR4M The Environment and Resource Management	**Environment Major** CGT3E Geographics: The Geographer's Toolkit	**Environment Major** CGR4E The Environment and Resource Management
May be used as a (C) Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12*		May be used as a (C) Cooperative education (2 credits) related to major credits, *recommended in Gr. 11*		May be used as a (C) Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12*	
CGG3O Travel and Tourism: A Regional Geographic Perspective *or* EPS3O Presentation and Speaking Skills	Cooperative Education *or* TFS4C Tourism	PAD3O Outdoor Activities *or* EPS3O Presentation and Speaking Skills	PPL4O Healthy Active Living Education *or*	SPH3U Physics *or* SNC3M Science	CGW4U Canadian and World Issues	PPL3O Healthy Active Living Education *or* EPS3O Presentation and Speaking Skills	Cooperative Education *or* SNC4E Science

Sample Bundles of Credits for the SHSM–The Environment: Environmental Science Focus

- Shaded boxes – required credits in the bundle for the SHSM–The Environment
- (C) – compulsory credits for the OSSD
- The letters C, E, M, O, and U at the end of course codes indicate the following types of courses: C – college preparation; E – workplace preparation; M – university/college preparation; O – open; U – university preparation

Apprenticeship Training Pathway		College Pathway		University Pathway		Workplace Pathway	
Grade 11	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**	**Grade 11**	**Grade 12**
An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit	An optional or a compulsory credit
(C) ENG3C English	(C) ENG4C English	(C) ENG3C English	(C) ENG4C English	(C) ENG3U English	(C) ENG4U English	(C) ENG3E English	(C) ENG4E English
(C) MEL3E Mathematics for Work and Everyday Life	MEL4E Mathematics for Work and Everyday Life	(C) MBF3C Foundations for College Mathematics	MAP4C Foundations for College Mathematics	(C) MCR3U Functions	MHF4U Advanced Functions	(C) MEL3E Mathematics for Work and Everyday Life	GLN4O Navigating the Workplace
CGT3E Geographics: The Geographer's Toolkit	SNC4E Science	SNC3M Science	TFS4C Tourism	SCH3U Chemistry	SCH4U Chemistry *or* SBI4U Biology	TCJ3E Construction Technology *or* TDJ3E Technological Design	TCJ4E Construction Technology *or* TDJ4E Technological Design
Environment Major SBI3C Biology *or* SNC3E Science	**Environment Major** PAD4O Outdoor Activities	**Environment Major** SBI3C Biology	**Environment Major** SCH4C Chemistry	**Environment Major** SBI3U Biology	**Environment Major** SBI4U Biology *or* SCH4U Chemistry	**Environment Major** SNC3E Science	**Environment Major** PAD4O Outdoor Activities
Environment Major CGT3E Geographics: The Geographer's Toolkit	**Environment Major** CGR4E The Environment and Resource Management	**Environment Major** CGF3M Physical Geography: Patterns, Processes, and Interactions	**Environment Major** CGR4M The Environment and Resource Management	**Environment Major** CGF3M Physical Geography: Patterns, Processes, and Interactions	**Environment Major** CGR4M The Environment and Resource Management	**Environment Major** CGT3E Geographics: The Geographer's Toolkit	**Environment Major** CGR4E The Environment and Resource Management
May be used as a (C) **Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12***		May be used as a (C) **Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12***		May be used as a (C) **Cooperative education (2 credits) related to major credits, *recommended in Gr. 11***		May be used as a (C) **Cooperative education (2 credits) related to major credits, *in either Gr. 11 or Gr. 12***	
CGG3O Travel and Tourism: A Regional Geographic Perspective *or* EPS3O Presentation and Speaking Skills	Cooperative Education *or* TFS4C Tourism	PAD3O Outdoor Activities *or* EPS3O Presentation and Speaking Skills	PPL4O Healthy Active Living Education *or* PAD4O Outdoor Activities	SPH3U Physics *or* SNC3M Science	CGW4U Canadian and World Issues *or* MDM4U Mathematics of Data Management	PPL3O Healthy Active Living Education *or* EPS3O Presentation and Speaking Skills	Cooperative Education *or* SNC4E Science

E. Occupations in the Environment Sector

The National Occupation Classification (NOC) is a system that describes and classifies all occupations in Canada using four-digit codes called National Occupation Codes (NOC). This system and the codes are the authoritative source for occupational information in Canada. Entering one of these four-digit codes in the "Quick Search" box on the NOC website (www5.hrsdc.gc.ca/NOC-CNP) provides occupational information related to that career.

For more information on occupations:

- go to the Ontario Skills Passport website (http://skills.edu.gov.on.ca)
- click on "Occupations and Tasks" in the navigation bar
- select "Sorted by NOC", and
- click on the "Sample Workplace Tasks" checkmark for one of the occupations to view a description of the occupation, an overview of the Essential Skills required in the occupation, a list of sample tasks for the occupation, and assessment tools and other career and employment information related to the occupation.

The following are examples of occupations in the environment sector, with corresponding NOC codes, sorted according to the type of postsecondary education or training the occupations would normally require.

Note: Some of the names of occupations given below may differ slightly from the names in the NOC. The names listed here reflect common usage by institutions and organizations in this sector in Ontario.

Apprenticeship Training	**College**
• This sector does not yet offer apprenticeship training opportunities.	• Aquaculture Operator and Manager 8257 • Biological Technologist or Biological Technician 2221 • Conservation Officer or Fishery Officer 2224 • Environmental Technician 2231 • Field Technician – Air Pollution 2231 • Forest Ecologist 2121 • Forestry Technologist/Technician 2223 • Geological and Mineral Technologist/ Technician 2212

	College *(continued)* • Habitat Management Technician 2221 • Hatchery or Fisheries Technician 2221 • Land Surveyors 2154 • Mapping and Related Technologist/ Technician 2255 • Quality Control – Chemical Engineering Technologist 2211 • Silviculture and Forestry Workers 8422 • Soil Testing Technologist 2231 • Technician – Pollution Control 2231
University • Air Quality Meteorologist 2114 • Chemical Engineer 2134 • Climatologist 2114 • Environmental Biologist 2121 • Environmental Engineer 2131 • Environmental Impact Analyst 4161 • Environmental Planner 2153 • Environmental and Occupational Toxicologist 2121 • Environmental Program Co-ordinator 4161 • Forestry Professional 2122 • Geological Engineer 2144 • Geologist and Geochemist 2113 • Interpretive Naturalist 2121 • Landscape Architects 2152 • Meteorologist 2114 • Urban and Land Use Planners 2153 • Waste Diversion Consultant 4161	**Workplace** • Canoeing Guide 6442 • Fishing Guide 6442 • Hunting Guide 6442 • Landscaping and Grounds Maintenance Workers 8612 • Lifeguard 5254 • Outdoor Sport and Recreation Guide 6442 • Outfitter 6442 • Recreation Program Leader 5254 • Recycled Paper Handler 7452 • Silviculture and Forestry Workers 8422 • Ski Instructor 5254 • Wastewater Treatment Plant Operator 9424

F. Postsecondary Programs and Training Related to Careers in the Environment Sector

The following are examples of programs and training related to careers in the environment sector and the accreditations or types of accreditation each results in:

Apprenticeship Training

This sector does not yet offer apprenticeship training opportunities.

College

Chemical Engineering Technology – Environmental	Advanced diploma
Ecosystem Management Technology	Diploma/Advanced diploma
Ecotourism and Adventure Tourism	Certificate
Environmental and Civil Engineering Technology	Diploma
Environmental Health and Safety	Bachelor's degree
Environmental Landscape Management	Diploma
Environmental and Natural Resource Studies	Diploma
Environmental Science and Technology	Bachelor's degree
Environmental Technology	Diploma/Advanced diploma
Fish and Wildlife Technician/Technology	Diploma/Advanced diploma
Geographic Information Systems – Applications	Diploma
Geographic Information Systems – Cartography	Diploma
Earth Resources Technology	Diploma
Geomatics Technology	Diploma
Integrated Environmental Site Remediation	Bachelor's degree
Natural Resources – Law Enforcement	Diploma
Outdoor Adventure Skills	Diploma
Park Operations and Outdoor Recreation	Diploma

University

Agricultural and Environmental Science	Bachelor's degree
Conservation and Restoration Ecology	Bachelor's degree
Earth Science (Geology and Geomorphology)	Bachelor's degree
Ecology	Bachelor's degree
Engineering (Environmental, Water Resources, Biological, Geological, Civil)	Bachelor's degree
Environment and Business	Bachelor's degree
Environment and Resource Studies	Bachelor's degree
Environmental Biology	Bachelor's degree
Environmental Chemistry	Bachelor's degree
Environmental Design	Bachelor's degree
Environmental Geography	Bachelor's degree
Environmental Science	Bachelor's degree
Environmental Studies	Bachelor's degree
Environmental Toxicology	Bachelor's degree
Geomatics and Geographic Information Systems	Bachelor's degree
Land Resource and Soil Science	Bachelor's degree
Natural Resources Management	Bachelor's degree
Outdoor Recreation	Bachelor's degree
Renewable Resources	Bachelor's degree

Training for the Workplace

Campground Operator	Certificate
Canoe Instructor	Certificate
Canoe/Hiking Guide	Certificate
Customer Service – Environmental Sector	Certificate
Freshwater Angling Guide	Certificate
Hunting Guide	Certificate
Lifeguard	Certificate
Municipal Grounds Person	Certificate
Outdoor Adventure Skills	Certificate
Swimming Instructor	Certificate
Tour Guide	Certificate

G. Resources

Associations and Other Professional Groups

Air and Waste Management Association – Ontario	www.awma.on.ca
Alliance of Sector Councils	www.councils.org
BioTalent Canada	www.biotalent.ca
Bird Studies Canada	www.bsc-eoc.org/
Bruce Trail Conservancy	www.brucetrail.org
Canadian Association for Renewable Energies	www.renewables.ca
Canadian Association of Recycling Industries	www.cari-acir.org
Canadian Forestry Association	www.canadianforestry.com
Canadian Society of Environmental Biologists	www.cseb-scbe.org/
Centre for Great Lakes Environmental Education	www.greatlakesed.org
Conference Board of Canada	www.conferenceboard.ca
Conservation Council of Ontario	www.greenontario.org
Conservation Ontario	www.conservation-ontario.on.ca
Council of Outdoor Educators of Ontario	www.coeo.org/aboutus.htm
David Suzuki Foundation	www.davidsuzuki.org
Ducks Unlimited	www.ducks.ca
EarthCare	www.earthcarecanada.com
EcoSchools	www.yorku.ca/ecoschl
Environmental Commissioner of Ontario	www.eco.on.ca
Environmental Education Ontario	www.eeon.org
Envirothon	www.envirothon.org
Evergreen	www.evergreen.ca/en/
Geocaching	www.geocaching.com
Green Ontario	www.greenontario.org
Invading Species Awareness	www.invadingspecies.com

Invasive Species	www.invasive.org
Learning for a Sustainable Future	www.lsf-lst.ca
Nature Conservancy of Canada	www.natureconservancy.ca
Ontario Association of Geographic and Environmental Education	www.oagee.org/conferences.html
Ontario Centres of Excellence – Centre for Earth and Environmental Technologies	www.oce-ontario.org
Ontario Cooperative Education Association	www.ocea.on.ca
Ontario Council for Technology Education	www.octe.on.ca
Ontario Environment Industry Association	www.oneia.ca
Ontario Environmental Network	www.oen.ca
Ontario Federation of Anglers and Hunters	www.ofah.org
Ontario Geocaching Association	www.ontgeocaching.com
Ontario Nature	www.ontarionature.org
Ontario School Counsellors' Association	www.osca.ca
Ontario Stewardship Council	www.ontariostewardship.org
Ontario Waterworks Association	www.owwa.com
PITCH-IN Canada	www.pitch-in.ca
Recycling	http://earth911.org
Roots & Shoots	www.rootsandshoots.org
Science Teachers Association of Ontario	www.stao.org
SEEDS Foundation	www.seedsfoundation.ca
Skills Canada	www.skillscanada.com
Skills Canada – Ontario	www.skillsontario.com
Waste Reduction Week in Canada	www.wrwcanada.com
World Wildlife Fund	www.wwf.ca

Careers

Apprentice Search	www.apprenticesearch.com
Canada Job Futures	www.jobfutures.ca/
Career Cruising	www.careercruising.com
Employment Ontario	www.Ontario.ca/employmentontario
Environmental Careers Organization Canada	www.eco.ca
Job Bank	www.jobbank.gc.ca/
Labour Market Information	www.labourmarketinformation.ca

National Occupation Classification	www23.hrdc-drhc.gc.ca
Ontario Prospects	www.ontarioprospects.info
Ontario Skills Passport (OSP)	http://skills.edu.gov.on.ca/
Ontario WorkInfoNet	www.onwin.ca/english
Statistics Canada	www.stat.can
Youth Opportunities Ontario	www.youthjobs.gov.on.ca

Education/Government

Applications of Working and Learning National Project	www.awal.ca/about.asp
Canadian Wildlife Service	www.cws-scf.ec.gc.ca
Environment Canada	www.ec.gc.ca
Federal Resources for Educational Excellence	www.free.ed.gov
Human Resources and Social Development Canada	www.hrsdc.gc.ca
Independent Learning Centre	www.ilc.org
Industry Canada	www.ic.gc.ca/epic/site/ic1.nsf/en/home
Ministry of Education	www.edu.gov.on.ca
Ministry of Energy & Infrastructure	www.meu.gov.on.ca
Ministry of Labour	www.labour.gov.on.ca
Ministry of Natural Resources	www.mnr.gov.on.ca
Ministry of Northern Development and Mines	www.mndm.gov.on.ca
Ministry of Research and Innovation	www.mri.gov.on.ca
Ministry of the Environment	www.ene.gov.on.ca
Ministry of Training, Colleges and Universities (MTCU)	www.edu.gov.on.ca/eng/tcu
Natural Resources Canada	www.nrcan-rncan.gc.ca
Ontario College Application Service	www.ontariocolleges.ca
Ontario Parks	www.ontarioparks.com
Ontario Universities' Application Centre	www.ouac.on.ca
Ontario Youth Apprenticeship Program	www.oyap.com
Parks Canada	www.pc.gc.ca
Passport to Prosperity	www.edu.gov.on.ca/passport
Towes: How Do Your Skills Measure Up? Skill Plan	http://measureup.towes.com

Safety, Training, and Certifications

Basic Ground Search and Rescue	www.nss.gc.ca
Best Boating	www.theoperatorcard.ca
BOATsmart! Canada	www.boatsmartcanada.ca
Bronze Cross	www.lifesaving.ca
Bronze Medallion	www.lifesaving.ca
Canada Safety Council (CSC)	www.safety-council.org
Canadian Centre for Occupational Health and Safety (CCOHS)	www.ccohs.ca/
Canadian Power and Sail Squadron	www.cps-ecp.ca
Canadian Red Cross	www.redcross.ca
Community Stream Steward Program	www.ofah.org/stream/index.cfm
EMP Canada	www.firstaidtraining.com
Focus on Forests	www.focusonforests.on.ca
Forensic and Nautical Consultants of Canada	www.boaterexam.com
Fur Harvest, Fur Management and Conservation Course	www.furmanagers.com
Green Check GPS	www.greencheckgps.ca
Guidepost Services	www.guidepostservices.ca/splash.asp
Hike Ontario	www.hikeontario.com
Hunter Apprenticeship Safety Program	www.ohep.net
Ice Safety training	www.besmartbesafe.ca
Ice Safety training	www.boatsmartcanada.com
Ice Safety training	www.lifesaving.ca
Industrial Accident Prevention Association (IAPA)	www.iapa.ca/home/home.asp
Invading Species Awareness Program	www.invadingspecies.com
Knot Index	www.realknots.com
Knots on the Web	www.earlham.edu/~peters/knotlink.htm
Leave No Trace	www.leavenotrace.ca
Lifesaving Society	www.lifesaving.ca
Live Safe! Work Smart!	www.livesafeworksmart.net
Marine Radio Operator	www.cps-ecp.ca
National Lifeguard Service	www.lifesaving.ca

Ontario Hunter Education Program	www.ohep.net
Ontario Recreational Canoeing and Kayaking Association	www.orca.on.ca
Ontario Search and Rescue Volunteer Association	http://osarva.nt.net
Ontario Stewardship Council	www.ontariostewardship.org
Ottawa Valley GPS	www3.sympatico.ca/dogtrooper44/
Paddle Canada	www.paddlingcanada.com
Passport to Safety	www.passporttosafety.com
Prevention Dynamics	www.preventiondynamics.com
Project Wild	www.wildeducation.org
Rescue 7 (First Aid)	www.rescue7.ca
Sirius Wilderness Medicine	www.siriusmed.com
St. John Ambulance	www.sja.ca
Virtual WHMIS	www.virtualwhmis.com
WHMIS in minutes	www.whmis.net
Wilderness Medical Associates	www.wildmed.ca
Workplace Safety and Insurance Board (WSIB)	www.wsib.on.ca

H. Appendices

Appendix A: Contextualized Learning Activities (CLAs) for the Specialist High Skills Majors

For the "other required credits" in the bundle of credits, students in a Specialist High Skills Major program must complete learning activities that are contextualized to the knowledge and skills relevant to the economic sector of the SHSM. Contextualized learning activities (CLAs) address curriculum expectations in these courses.

CLAs must take a minimum of 6 hours and a maximum of 10 hours to complete. Boards may choose to develop one activity that takes 6–10 hours to complete, or two or more activities that together take a minimum of 6 hours and a maximum of 10 hours to complete.

This template must be used to describe the CLAs. The completed form must be submitted to the Ministry of Education.

CLAs will be posted on the SHSM e-Community website, at http://community.elearningontario.ca (a password-protected site for educators).

Contextualized Learning Activity (CLA) Template

- *Submit all material in Microsoft Word.*
- *When selecting materials for use in connection with the CLA(s), be sure to observe all current copyright regulations (see Access Copyright – The Canadian Copyright Licensing Agency, at www.accesscopyright.ca).*

Note to CLA developers: *Please remove any instructions and coloured text from the boxes before completing the template for submission. (The coloured text is provided to assist you in your planning.)*

Contact Information

Board: _____

Development date: _____

Contact person: _____

Position: _____

Phone: ( ) _____ - _____ Fax: ( ) _____ - _____

E-mail: _____

Specialist High Skills Major	
Course code and course title	
Name of contextualized learning activity/activities	
Brief description of contextualized learning activity/activities	
Duration	*(The CLA(s) must take a minimum of 6 hours and a maximum of 10 hours to complete.)*

(continued)

Appendix A *(continued)*

Overall expectations	*(Identify the overall expectation(s) from the Ontario curriculum to be assessed and evaluated through the CLA(s). Include the relevant strand title(s).)*
Specific expectations	*(Identify the specific expectations related to the above overall expectations that will be addressed in the instructional and assessment strategies. Include the relevant strand titles.)* Consider the following as part of your planning: ***What do we want students to learn?*** • *What are the specific/key learning goals related to these expectations?* • *Are these specific/key learning goals arranged in a way that will allow students to achieve the desired learning incrementally?*
Catholic graduate expectations (if applicable)	
Essential Skills and work habits from the OSP	*In the list below, check off the Essential Skills and work habits that are addressed in the CLA(s).* **Essential Skills** ❑ *Reading Text* ❑ *Writing* ❑ *Document Use* ❑ *Computer Use* ❑ *Oral Communication* *Numeracy* ❑ *Money Math* ❑ *Scheduling or Budgeting and Accounting* ❑ *Measurement and Calculation* ❑ *Data Analysis* ❑ *Numerical Estimation* *Thinking Skills* ❑ *Job Task Planning and Organizing* ❑ *Decision Making* ❑ *Problem Solving* ❑ *Finding Information* **Work Habits** ❑ *Working Safely* ❑ *Teamwork* ❑ *Reliability* ❑ *Organization* ❑ *Working Independently* ❑ *Initiative* ❑ *Self-advocacy* ❑ *Customer Service* ❑ *Entrepreneurship*

Instructional/Assessment Strategies

Teacher's notes *(Provide suggestions that will assist the teacher in delivering the CLA(s). For example, remind teachers to make sure that handouts, such as authentic workplace materials/documents used by the sector, are available for the activity.)*

Context *(Describe the workplace context for the activity/activities.)*

Strategies *(In point form, describe the sequence of instructional and assessment strategies that will support the intended learning.)*

How will the learning be designed?

- *Do the instructional strategies support the achievement of the learning goals?*
- *Are the assessment strategies linked to each of the instructional strategies in a planned, purposeful, and systematic way?*
- *Do the assessment and instructional strategies provide for feedback and ongoing monitoring of the student's learning throughout the CLA?*
- *How will teachers differentiate instruction and assessment to meet the learning needs of students?*

What adjustments must be made to the instructional and assessment strategies for students who are not showing progress in their learning?

Assessment and Evaluation of Student Achievement

(List all assessment and evaluation strategies and tasks based on the strategies identified in the preceding section. ***Attach handouts, tests, assignments, exercises, etc.)***

As you plan, please keep the following important considerations in mind:	
How will we know students are learning?	How will we know students have learned?
• *How will students demonstrate progress towards the desired learning?*	• *How will students demonstrate achievement of the desired learning?*
• *What criteria will be used to determine whether students are learning?*	• *What criteria will be used to determine that students have learned?*
• *What assessment strategies/tools will best gather evidence of progress?*	• *What assessment strategies/tools will best gather evidence that students have learned?*
• *Will the assessment tasks provide opportunities for students to demonstrate the full range of their learning in a variety of ways?*	

Strategies/Tasks *(add rows as required)*	**Purpose** *Assessment for Learning (diagnostic, formative)* *Assessment of Learning (summative, evaluation)*
1.	
2.	
3.	

Assessment tools

(List all tools used and attach checklists, rubrics, correction keys, etc.)

Additional Notes/Comments/Explanations

(Provide additional suggestions for teachers that will help them deliver the CLA(s).)

Resources

(List all the resources needed to support the implementation of the CLA(s).)

Authentic Workplace Materials *(e.g., blueprints, workplace manuals, specification sheets, spreadsheets)*

Human Resources

Print

Video/DVD

Software

Websites

Other

Accommodations

(List instructional, environmental, and assessment accommodations.)

What adjustments must be made to the instructional and assessment strategies to accommodate different learning needs?

List of Attachments

(Attach all related materials, e.g., student worksheets, tests, rubrics.)

Appendix B: Fact Sheets

A. Cooperative Education Fact Sheet

All Ontario cooperative education programs have specific requirements, which include the following.

Pre-course interview

The purpose of this initial interview with the student applicant is to ensure that:

- the student is ready to undertake learning in the workplace, and is taking, will be taking, or has taken a course that is related to the proposed cooperative education placement (where a student's readiness or commitment is not sufficiently evident, his or her acceptance into the cooperative education program may be postponed until the requirements are met);
- barriers to success in the workplace are identified, and appropriate supports can be put in place (e.g., assistive devices, job coaches);
- there is a placement that is appropriate to the student's goals and interests.

Establishment of the placement

Placements for students must be arranged by the school and must meet the following requirements:

- A placement must be assessed by a teacher before the student is assigned to it to ensure that the placement offers a positive learning environment in a safe workplace.
- It is not general practice for a cooperative education student to receive remuneration for work done in a placement, since the emphasis is on learning. However, provided that all the criteria for the cooperative education program are met, a board may permit a cooperative education student in a specialized program (e.g., a re-entry program) or in a particular placement (e.g., a unionized environment) to receive payment.
- A placement must have Workplace Safety and Insurance coverage through the ministry or the workplace (see Policy/Program Memorandum No. 76A, September 27, 2000).

Pre-placement instruction

A minimum of fifteen hours of instruction must be provided on:

- workplace health and safety (for resources, see www.livesafeworksmart.net and www.passporttosafety.com);
- employment law, unions, workplace ethics, human rights, and confidentiality.

Personalized placement learning plan (PPLP)

A PPLP must be developed for each student. It must be:

- based on expectations from the related course in the Ontario curriculum, the requirements for cooperative education, and industry-specific requirements;
- developed by the cooperative education teacher in partnership with the employer and student (where the cooperative education teacher is not qualified in the related subject or the student has an Individual Education Plan, the cooperative education teacher will consult with the appropriate subject or special education teacher).

Samples of PPLPs are available at www.edu.gov.on.ca.

Assessment and evaluation

A qualified teacher must assess and evaluate a student's progress in achieving the curriculum expectations and in meeting the requirements identified in the student's PPLP through regular workplace monitoring meetings (a minimum of three per credit). During workplace monitoring, the teacher will:

- observe student performance of workplace tasks, plan next steps, and troubleshoot problem situations;
- conduct formal evaluations with the student's supervisor.

Student achievement is also assessed through:

- written assignments, seminar presentations, reflective journals, and career portfolios;
- a culminating independent-study activity that links the student's cooperative education placement experience with the curriculum expectations of the related course;
- a minimum of two performance appraisals written by the placement supervisor.

Teachers are encouraged to ask employers to use the Ontario Skills Passport Work Plan to assess and record a student's demonstration of Essential Skills and work habits (see http://skills.edu.gov.on.ca).

In-school integration sessions

In-school sessions of a minimum of seven hours per credit provide students with opportunities to:

- analyse and share their workplace experience;
- relate the placement experience to the curriculum expectations;
- reinforce the job-skills theory acquired in the classroom and the skills, techniques, and principles learned and applied at the placement.

B. Experiential Learning and Career Exploration Fact Sheet

Experience	Description	Key Requirements
Career Exploration Activities	• Activities that allow students to explore career opportunities through worksite tours, career conferences or competitions (e.g., Skills Canada), simulation activities (e.g., Junior Achievement), or contact with a career mentor • May be incorporated into any credit course • Count towards the Experiential Learning and Career Exploration component required for an SHSM	• Preparation for every activity, including review of learning expectations, activity protocols, and workplace health and safety • Opportunity for students to reflect on the activity • Completed field trip form and transportation agreement
Job Shadowing 1/2 to 1 day (in some cases up to 3 days)	• One-on-one ***observation*** of a worker at a place of employment • May be incorporated into any credit course • Counts towards the Experiential Learning and Career Exploration component required for an SHSM	• Teacher selection of an appropriate placement in a safe work environment • Preparation for the placement, including review of learning expectations, activity protocols, and workplace health and safety • Opportunity for students to reflect on the experience • Completed field trip form and transportation agreement • WSIB coverage if placement is more than 1 day
Job Twinning 1/2 to 1 day	• One-on-one ***observation*** of a cooperative education student at his or her placement • May be incorporated into any credit course • Counts towards the Experiential Learning and Career Exploration component required for an SHSM	• Pairing of a student with a cooperative education student • Preparation for the placement, including review of learning expectations, activity protocols, and workplace health and safety • Opportunity for students to reflect on the experience • Completed field trip form and transportation agreement
Work Experience/ Virtual Work Experience* 1–4 weeks	• A planned learning opportunity that provides students with a relatively short-term work experience. Virtual work experience is facilitated through the use of communications technology at the school. • May be incorporated into any credit course • Counts towards the Experiential Learning and Career Exploration component required for an SHSM.	• Placement assessment • Pre-placement instruction addressing job-readiness skills, placement expectations, and workplace health and safety • Opportunity for students to reflect on the experience • Development of a learning plan • Monitoring of student's work at actual or virtual site at least once during the experience (*recommended*) • WSIB coverage

* See the Virtual Cooperative Education Fact Sheet at www.edu.gov.on.ca/eng/teachers/studentsuccess/expansion.html for information on accessing employers.

Appendix C: Minimum Age to Work in and Visit Ontario Workplaces[1]

Specialist High Skills Major[2]	Type of Workplace	Minimum Age to Work	Minimum Age to Visit / Conditions for Visiting[3]
• Arts and Culture • Business • Community Safety and Emergency Services • Health and Wellness • Hospitality and Tourism • Information and Communications Technology	Industrial establishments,[4] such as offices, stores, arenas, restaurant serving areas	14	The regulation governing industrial establishments (Reg. 851, R.R.O. 1990) made under the OHSA sets out minimum age restrictions for workers, covering workplaces such as offices, stores, arenas, restaurants, and factories. However, the regulation states that people younger than the specified minimum age to work may *visit* (but not *work in*) these establishments if: • they are accompanied by a person who has attained the age of majority (i.e., 18 years of age); • they are being guided on a tour of the industrial establishment (e.g., office, store, arena, or factory); • they are in an area of the industrial establishment used for sales purposes; or • they are in an area of the establishment to which the public generally has access.
• Business • Community Safety and Emergency Services • Hospitality and Tourism • Information and Communications Technology • Manufacturing • Transportation	Most factories,[5] including restaurants and any commercial kitchens, automotive service garages, produce and meat preparation or shipping and receiving areas in grocery stores, laundries, and warehouses	15	
• Forestry	Logging operations[6]	16	
• Community Safety and Emergency Services • Construction • Information and Communications Technology	Construction project[7]	16 Under the regulation governing construction projects (O. Reg. 213/91) made under the OHSA, 16 is the minimum age to work on *or* to visit *any* construction project. A person under the age of 16 may *visit* a construction site *only when work is not being performed there*. (Note that the definitions of *construction* and *construction project* include a wide variety of types of work and workplaces. It is important to review the definitions carefully. See note 7, below.)	

All notes appear on pages 38–40.

(continued)

Appendix C *(continued)*

Specialist High Skills Major[2]	Type of Workplace	Minimum Age to Work	Minimum Age to Visit / Conditions for Visiting[3]
• Mining	Surface mines,[8] mining plants[9] Underground mine Working face of a surface mine	16 18 18	The regulation governing mines and mining plants (Reg. 854, R.R.O. 1990) made under the OHSA allows for tours or visits to mines and mining plants by persons who are younger than the specified minimum age to work if they are accompanied by and under the direction of a guide.
• Agriculture • Arts and Culture • Community Safety and Emergency Services • Environment • Health and Wellness • Horticulture and Landscaping • Information and Communications Technology	Certain workplaces (or parts thereof) may be covered, with respect to age restrictions, by regulations governing other sectors. For example, see the industrial establishments regulation (Reg. 851, R.R.O. 1990).		
• Construction • Manufacturing	Window cleaning	18	*Not applicable.* (The regulation governing window cleaning is Reg. 859, R.R.O. 1990.)

Notes to Appendix C

1. As specified in regulations made under the Occupational Health and Safety Act (OHSA). Other statutes and regulations made under those statutes also set minimum ages for various occupations.

   In addition, some workplaces have established their own, *more stringent* minimum ages for employment. For instance, some retail establishments and restaurant chains will not hire anyone under the age of 16, even though the legislated minimum age limit is lower. Similarly, some industrial establishments, and other workplaces that require the use of heavy equipment or machinery, will not hire anyone under the age

of 18, even though the legislated minimum age limit might be lower. Such in-house minimum age requirements may be acceptable, as long as the limits do not conflict with the Ontario Human Rights Code or other applicable law.

2. Column 1 identifies the Specialist High Skills Majors with which the workplace categories in column 2 may be associated. Note, however, that some specialist programs may involve workplaces identified in more than one category (e.g., a business program may involve offices, factories, and construction sites). When using this chart to verify compliance with minimum age to work and visit requirements, always refer to the particular type of workplaces involved in the program (column 2), not to the sector to which the program relates (column 1).

3. Under certain conditions, as identified in this table, persons younger than the minimum age to work may visit, *but not work in*, certain workplaces.

4. According to the OHSA, ***industrial establishment*** means an office building, factory, arena, shop or office, and any land, buildings and structures appertaining thereto.

5. According to the OHSA, ***factory*** means

   a) a building or place other than a mine, mining plant or place where homework is carried on, where,

      i) any manufacturing process or assembling in connection with the manufacturing of any goods or products is carried on,

      ii) in preparing, inspecting, manufacturing, finishing, repairing, warehousing, cleaning or adapting for hire or sale any substance, article or thing, energy is,

         (A) used to work with any machinery or device, or

         (B) modified in any manner,

      iii) any work is performed by way of trade or for the purposes of gain in or incidental to the making of any goods, substance, article or thing or part thereof,

      iv) any work is performed by way of trade or for the purposes of gain in or incidental to the altering, demolishing, repairing, maintaining, ornamenting, finishing, storing, cleaning, washing or adapting for sale of any goods, substance, article or thing, or

      v) aircraft, locomotives, or vehicles used for private or public transport are maintained,

   b) a laundry including a laundry operated in conjunction with,

      i) a public or private hospital,

      ii) a hotel, or

      iii) a public or private institution for religious, charitable or educational purposes, and

   c) a logging operation.

6. According to the OHSA, ***logging*** means the operation of felling or trimming trees for commercial or industrial purposes or for the clearing of land, and includes the measuring, storing, transporting or floating of logs, the maintenance of haul roads, scarification, the carrying out of planned burns and the practice of silviculture.

7. According to the OHSA, ***construction*** includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project but does not include any work or undertaking underground in a mine.

   Project means a construction project, whether public or private, including,

   a) the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street, runway, parking lot, cofferdam, conduit, sewer, water main, service connection, telegraph, telephone or electrical cable, pipe line, duct or well, or any combination thereof,

   b) the moving of a building or structure, and

   c) any work or undertaking, or any lands or appurtenances used in connection with construction.

8. According to the OHSA, ***mine*** means any work or undertaking for the purpose of opening up, proving, removing or extracting any metallic or non-metallic mineral or mineral-bearing substance, rock, earth, clay, sand or gravel.

9. According to the OHSA, ***mining plant*** means any roasting or smelting furnace, concentrator, mill or place used for or in connection with washing, crushing, grinding, sifting, reducing, leaching, roasting, smelting, refining, treating or research on any substance mentioned in the definition of "mine" (see note 8, above).

Ministry of Education
08-080

Printed on recycled paper

ISBN 978-1-4249-7736-9 Print
ISBN 978-1-4249-7737-6 PDF

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